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# ON THE GENUS ONTHOPHILUS FROM JAPAN (COLEOPTERA : HISTERIDAE)

By MASAHIRO ÔHARA and TAKEHIKO NAKANE

## *Abstract*

ÔHARA, M. and NAKANE, T. 1986. On the genus *Onthophilus* from Japan (Coleoptera : Histeridae). *Ins. matsum. n. s.* 35 : 1-15, 7 figs. (4 text-figs., 3 pls.).

The genus *Onthophilus* Leach from Japan is revised and seven species in total are recognized to occur there. Of them, *O. ordinarius* Lewis is newly recorded from Japan, and *O. aonoi* is described as new to science. Male genitalia of all the known Japanese species except *kamiyai* are figured and a key to the species is provided.

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## INTRODUCTION

*Onthophilus* Leach is a small genus in the family Histeridae, and has been represented by 32 species. Crowson (1974) states that the genus would be the most primitive among the extant members of the family. The Palaearctic species of the genus are revised by Reichardt (1933) and the Nearctic ones by Helava (1978). Some useful terms for important costae and carinae are proposed by Helava (l.c.). In Japan Lewis (1884, 1907) recorded *ostreatus* and described *flavicornis, silvae* and *niponensis* as new. Adachi (1930) studied Japanese *Onthophilus* and described *kamiyai* as new. In this paper we recognize seven species in Japan, of which one species, *ordinarius* Lewis, is recorded as new to Japan and another species, *aonoi,* is described as new to science. All of them, except *kamiyai,* are figured with emphasis on the pronotum and male genitalia. A key to the species is provided.


## ACKNOWLEDGEMENT

We are much indebted to the following entomologists for their encouragement and help in offering material: Prof. Y. Hirashima, Entomological laboratory, Kyûshû University; Dr. Y. Miyatake and Mr. I. Kanazawa, Ôsaka Museum of Natural History: Dr. Y. Kusui, Otaru Quarantine Station; Mr. T. Aono, Okayama; Mr. M. Ishida, Tôkyô; Mr. K. Masumoto, Yokohama; Mr. Y. Hirano, Odawara; Mr. S. Imasaka, Shimabara; Mr. S. Nomura, Kyûshû University; Mr. T. Tanabe, Kagoshima University. Our thanks are due to Dr. J. Helava, Department of Biology, Carleton University, Canada, and Dr. P. Vienna, Venezia-Lido, Italy, for their gift of valuable literature, and also to Dr. Y. Watanabe, Tôkyô Agriculture College, for his valuable suggestion as to the type specimens of *kamiyai*.

The senior author deepest thanks Prof. S. Takagi and Dr. M. Suwa, Entomological Institute, Hokkaidô University, for their kind advice in making the manuscript, and also to Mr. K. Sakai, Kagoshima University, for his help in preparing scanning electron microscope pictures.


## TERMINOLOGY

For the terminology of the striae and other surface features, we have followed Wenzel and Dybas (1941) and Helava (1978).

Head (Fig. 1-A) with two carinae.

VFC (vertico-frontal carina or "verto-frontal" carina in Helava). Carina located along the midline extending from the occipital carina to between the antennae; may be variously reduced.

LFC (latero-frontal carina). Carina running from the antennal pit, obliquely arcoss the face, to, or just above, the clypeus.

Pronotum (Fig. 1-B) with one to three pairs of costae (*O. silvae* with four pairs of costae, but the costa situated between $PC_1$ and $PC_2$ is very short. In this paper this short costa is not named).

$PC_1$ (pronotal costa 1). Costa closest to the lateral edge.

$PC_2$ (pronotal costa 2). Costa running between $PC_1$ and $PC_3$.

$PC_3$ (pronotal costa 3). Costa nearest to the midline.

Each elytron (Fig. 1-B) with eight striae, which are named external and internal subhumeral, one to five, and sutural from outside to inside. The order of numbering in Histeridae is opposite to that in most other Coleoptera. In the case of the genus *Onthophilus* , moreover, there are many costae, which are more evident than striae. Major costae are named in the following lines, but minor costae are not named.

SC (sutural costa). Costa lying mesad of the sutural stria, i.e. between the stria and the suture.

$EC_5$ (elytral costa 5). Costa lying mesad of stria 5.

$EC_4$ (elytral costa 4). Costa lying mesad of stria 4.

$EC_3$ (elytral costa 3). Costa lying mesad of stria 3.

$EC_2$ (elytral costa 2). Costa lying mesad of stria 2.

$EC_1$ (elytral costa 1). Costa lying mesad of stria 1.

ISC (internal subhumeral costa). Costa lying mesad of the internal subhumeral stria.

ESC (external subhumeral costa). Costa lying mesad of the external subhumeral stria. This costa is straight and not sinuous along the stria, so that it is separated from the stria at its front end by a semicircular area.

Propygidium (Fig. 1-C) with three carinae.

PMC. Carina running along the midline.

PLC. Carina running along the lateral margin.

Pygidium (Fig. 1-C) with two carinae.

TC (transverse carina). Carina running across the pygidium near the base.

LC (longitudinal carina). Carina running along the midline.

## THE GENUS ONTHOPHILUS LEACH

*Onthophilus* Leach, 1817 : 77 [Type-species : *Hister striatus* Forster, 1771].
*Scolytus* O. Müller, 1776 : 14 (nec. Geoffroy, 1762).

Body oval, usually black. Antennae, mouthparts and legs fuscous or fulvous. Head has one to three carinae, and with coarse punctures. Labrum has at least two setiferous punctures. Antennal scape angulate. Pronotum with two to eight discal

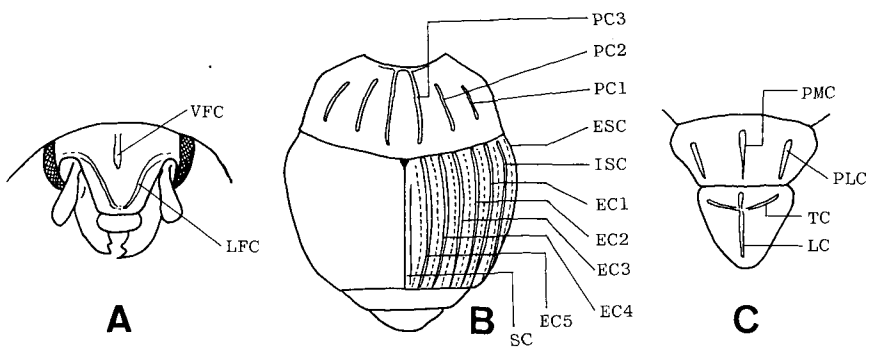


Fig. 1. A : Head of an *Onthophilus* showing principal carinae. B : Dorsal view of pronotum and elytra showing principal costae. C : Propygidium and pygidium showing principal carinae.

costae. Elytron with eight striae and multicostate, some costae usually very strong, appearing very rough and heavily sculptured. Propygidium and pygidium with or without carinae. Prosternal lobe is present. Prosternum without carinal striae; hind margin emarginate to fit mesosternal anterior margin. Antennal cavities situated in anterolateral prothoracic angles, at least partly closed beneath by prosternal alae. Meso-and metasternum with large punctures. Protibiae slender and multidenticulate. Tarsi 5-5-5. Paramera of male genitalia fused with each other except apically.

## KEY TO THE SPECIES

1 ( 2) Pronotum with 8 costae. Body length* 2.50-2.65 mm. Figs. 2(A), 4(A-B), 5b(G, K), 5c(O, S). ..... *O. silvae* Lewis
2 ( 1) Pronotum with 4 or 6 costae.
3 ( 8) $EC_3$ ending just caudad of a deep transverse fossa situated within the front margin of the elytron.
4 ( 5) $PC_3$ present on apical and basal half of the pronotum, and strongly developed. Body length 3.60-4.68 mm. Figs. 2(B), 4(C-D), 5a(A), 5b(I), 5c(M, Q)..... *O. ostreatus* Lewis
5 ( 4) $PC_3$ absent, or present only on basal half of the pronotum.
6 ( 7) $PC_3$ present. Body length 2.50-3.02 mm. Figs. 2(C), 3(A), 4(E-F), 5a(B), 5b(J), 5c(N.R). ..... *O. niponensis* Lewis
7 ( 6) $PC_3$ absent. Body length 3.28-3.38 mm. Figs. 2(D), 3(B, D-G), 4(G-H), 5a(C-D). ..... *O. aonoi* M. Ôhara et Nakane sp. nov.
8 ( 3) $EC_3$ entire upto the front margin of the elytron.

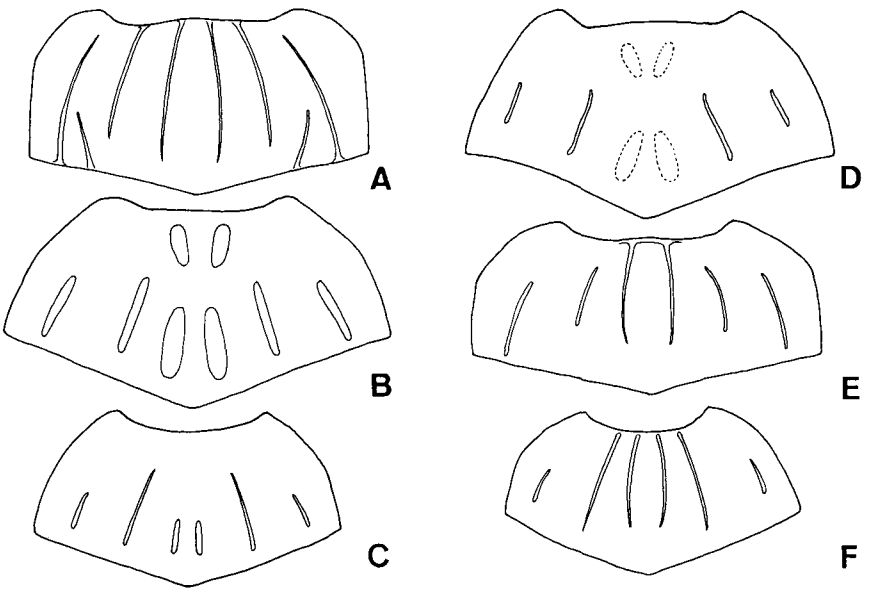


Fig. 2. Pronotum in dorsal view. A: *Onthophilus silvae* Lewis. B: *O. ostreatus* Lewis. C: *O. niponensis* Lewis. D: *O. aonoi* sp. nov. E: *O. ordinarius* Lewis. F: *O. flavicornis* Lewis.

* Body length: length from anterior angles of pronotum to apex of propygidium.

9 (10) Body longer than 2.5 mm (2.86-3.54 mm). Elytral costae sometimes interrupted. Figs. 2(E), 3(C), 4(I-J), 5a(E-F). ..... *O. ordinarius* Lewis

10 ( 9) Body shorter than 2.5 mm. Elytral costae clear and complete.

11 (12) Propygidium with 3 costae. Body length 1.82-2.34 mm. Figs. 2(F), 4(K-L), 5b(H, L), 5c (P, T). ..... *O. flavicornis* Lewis

12 (11) Propygidium with 1 costa. Body length 2 mm (after Adachi, 1930). ..... *O. kamiyai* Adachi

## *Onthophilus silvae* Lewis

*Onthophilus silvae* Lewis, 1884 : 139 [Japan : Akinomiya, near Suwa Lake] ; Schönfeldt, 1887 : 53 ; Bickhardt, 1910 : 80 [catalogued] ; Bickhardt, 1916 : 66 [catalogued] ; Adachi, 1930 : 249 [listed ; key] ; Reichardt, 1933 : 142, 143 [key] ; Kamiya and Takagi, 1938 : 22 [listed] ; Kryzhanovsky and Reichardt, 1976 : 286 [key] ; Hisamatsu, 1985 : 225, Pl. 40 [photo. ; noted].

Specimens examined. 1♂ and 5 exs. Hokkaidô—1♂ and 1 ex., Sapporo, 12/vi/?, no collector's name. (Hokkaidô Univ.) ; 4 exs., Moiwa, Sapporo, no date, no collector's name. (Hokkaidô Univ.). Honshû—1 ex., Daiyuzan, Hakone, Kanagawa-ken, 7/viii/1982, Y. Hirano leg.

Distribution. Japan (Hokkaidô ; Honshû). New to Hokkaidô.

Remarks. This species is easily distinguished from all the other Japanese species of the genus by the following characters : the presence of a costa between $PC_1$ and $PC_2$, the costa being very short, occurring on the basal third of the pronotum and running towards $PC_1$ ; the interstices between costae of elytra with a longitudinal series of transverse punctures appearing at regular intervals. These characters are not general in this genus.

Hirano (1986) reported the association of this species with *Lasius (Dendrolasius) fuliginosus* (Latreille) (Hymenoptera : Formicidae).

## *Onthophilus ostreatus* Lewis

*Onthophilus ostreatus* Lewis, 1879 : 78 [China : ?Hong Kong] ; Lewis, 1884 : 139 [Japan : Yokohama] ; Schönfeldt, 1887 : 53 ; Bickhardt, 1910 : 80 [catalogued] ; Bickhardt, 1916 : 66, taf. 2, fig. 13, taf. 3, fig. 17 [catalogued ; illustrated] ; Adachi, 1930 : 249 [noted ; key] ; Reichardt, 1933 : 143, fig. 13 [key ; illustrated] ; Kamiya and Takagi, 1938 : 22 [listed] ; Reichardt and Kryzhanovsky, 1964 : 171 [China ; Kuatun] ; Kryzhanovsky and Reichardt, 1976 : 289 [key ; description ; illustrated] ; Hisamatsu, 1985 : 226 [photo. ; noted].

Specimens examined. 8♂♂, 8♀♀, and 55 exs. Honshû— 1♀, Kuriyagawa, Iwate-ken, 26/ix/1975, H. Hayakawa leg. ; 1 ex., Abiko, Chiba-ken, 15/x/1979, M. Ishida leg. ; 4 exs., Tôkyô, 18/x and 3/xi/1913, H. Takabayashi leg. (Hokkaidô Univ.) ; 1 ex., Suginami, Tôkyô-to, 14/xi/1983, M. Ishida leg. ; 2 exs., Itabashi, Tôkyô-to, 8/xi/1959, S. Kondô leg. ; 3♂♂ and 1♀, Mt. Ôkura, Yokohama, Kanagawa-ken, 3/xi/1942, T. Okutani leg. ; 1♂ and 2 exs., Hiyoshi, Kanagawa-ken, 16/x/1965, K. Masumoto leg. ; 1♀ and 1 ex., Sagamihara, Kanagawa-ken, 26/x/1975, K. Moriya leg. ; 2 exs., Fuchinobe, Kanagawa-ken, 18/x/1965 and 23/x/1966, Y. Kusui leg. ; 1 ex., Gifu, no date, Nawa leg. (Hokkaidô Univ.) ; 1♀ and 1 ex., Gifu, Gifu-ken, 6/xi/1945, K. Ôbayashi leg. ; 1♀, Tanikumi, Gifu-ken, 26/vii/1938, H. Hattori leg. ; 1♂, Nikenjaya, Kyôto-fu, 6/x/1951, H. Ishida leg. ; 2♂♂ and 2♀♀, Motoyama-mura, Kôbe, Hyôgo-ken, 17/xi/1941, K. Sakaguchi leg. Kyûshû—1♀, Moji, Fukuo-

ka-ken, ?/ix/1933, T. Okutani leg.; 1♂ and 38 exs., Kanoya, Kagoshima-ken, 23/xi/1981 and 7/xii/1984, M. Ôhara leg.; 2 exs., Shimabara, Nagasaki-ken, 8/xii/1976, S. Imasaka leg.

Distribution. Japan (Honshû; Shikoku; Kyûshû); Continental China; Taiwan.

Remarks. This species is the largest among the Japanese species of *Onthophilus*. It is similar to *niponensis, aonoi* sp. nov. and *ordinarius*, but easily separated from them by the following characters: $PC_3$ divided into apical and basal halves; body larger, and the punctures of pronotum coarser. In general the adult of this species appears in autumn (Sep.-Dec.), and has been found under cow and dog dung, human feces, and decaying vegetable matter.

### *Onthophilus niponensis* Lewis

*Onthophilus niponensis* Lewis, 1907: 107 [Japan: "Tokio" (Tôkyô)]; Bickhardt, 1910: 80 [catalogued]; Bickhardt, 1916: 66 [catalogued]; Adachi, 1930: 250 [noted; key]; Reichardt, 1933: 141, 143 [key; illustrated]; Kamiya and Takagi, 1938: 22[listed]; Reichardt, 1941: 88, 93; Kryzhanovsky and Reichardt, 1976: 286, 289 [key; noted]; Hisamatsu, 1985: 226 [photo.; noted].

Specimens examined. 1♂, 5♀♀, and 10 exs. Honshû—3♀♀, Hachinohe, Aomori-ken, 30/x/1946, A. Fukuda leg.; 1♂, Wakamatsu, Fukushima-ken, 4/iv/1948, K. Nagayama leg.; 2 exs., ditto, 5/iv/1948, Y. Kurosawa leg.; 1♀, Aizu, Fukushima-ken, 1/iv/1948, Y. Kurosawa leg.; 4 exs., Gumma-ken, no date, T. Takei leg. (Hokkaidô Univ.); 3 exs., Tôkyô, 18/x/1913, Takabayashi leg. (Hokkaidô Univ.); 1 ex., Komaba, Tôkyô-to, 23/xii/1913, S. Hirayama leg. (Hokkaidô Univ.); 1♀, Ogikubo, Tôkyô-to, 9/iii/1965, M. Ishida leg.

Distribution. Japan (Honshû; Kyûshû).

Remarks. This species is allied to *ostreatus, aonoi* sp. nov. and *ordinarius*, yet is separated from them by the characters given in the key.

### *Onthophilus aonoi* sp. nov.

♂. Body length 3.28 mm between anterior angles of pronotum and apex of propygidium, and 3.01 mm between anterior angles of pronotum and apices of elytra. Width 2.40 mm.

Body oval, black. Antennae, maxillae and tarsi fuscous.

Head without VFC and LFC, rather even on vertex but with a very short elevation between antennal pits; clypeus elevated, thus the head appearing feebly concave behind clypeus; edge of antennal pits also elevated. Punctures large, round, shallow and separated from each other by 0.3 times their diameter. Labrum with two distinct setiferous punctures at lateral one-fifth, and with several minor setiferous punctures. Mandibles strongly developed and with large punctures, those along the dorsal keel being setiferous, but the apical third of mandible shining and not punctate. Scape of antenna with some large setiferous and some moderate-sized unsetiferous punctures, these punctures being separated by about half their diameter (Fig. 3-D).

Pronotum 0.54 times as long as wide, and strongly convex. Sides feebly arcuate

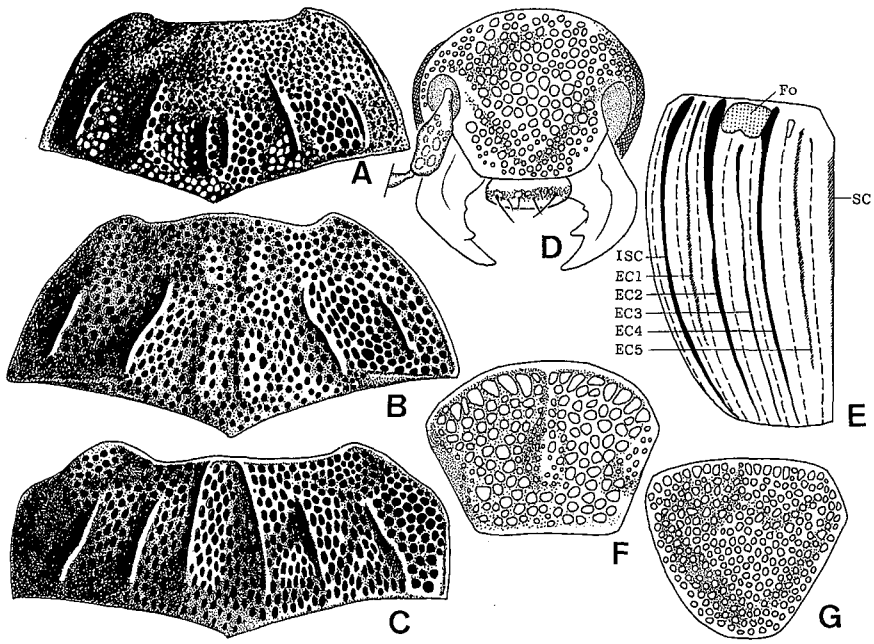


Fig. 3. A-C: Pronotum in dorsal view, showing punctures and costae. A: *Onthophilus niponensis* Lewis. B: *O. aonoi* sp. nov. C: *O. ordinarius* Lewis. D-G: *O. aonoi* sp. nov. D: Head. E: Left elytron (Fo: Fossa, SC, $EC_{1-5}$, ISC: see under Terminology). F: Propygidium. G: Pygidium.

and convergent anteriorly. Anterior angles obtuse. Anterior margin arcuate-emarginate. Disk with only 4 distinct costae, $PC_3$ suggested by feeble elevations on the apical and basal areas, the anterior and the posterior elevations respectively convergent and divergent caudad. $PC_2$ and $PC_1$ almost straight; $PC_2$ clearly elevated on basal half, but not reaching basal margin; $PC_1$ clearly elevated on basal third, but not reaching basal margin. Punctures on apical half except on costae large, round, shallow and dense; between $PC_2$ moderate-sized, shallow and sparse, round or elongate, especially elongate near $PC_2$; between $PC_1$ and $PC_2$ on inner half (near $PC_2$) elongate, large and dense, on outer half round; between $PC_1$ and lateral margin large, round and dense (Fig. 3-B).

Elytra wider than pronotum. All costae with two rows of punctures on sides, and depressed near apical margin. SC, $EC_5$, $EC_3$, $EC_1$ lower than other costae. SC feebly elevated, lower at basal fifth, then slightly elevated to middle, and abbreviated in apical fifth, with elongate or round (on base) punctures. $EC_5$ low, abbreviated in apical fifth, sparsely with elongate and shallow punctures. $EC_4$ abruptly elevated, shining on vertex. $EC_3$ low, suggested by a row of fine punctures, and ending at basal sixth, where it is replaced by a transverse fossa lying between $EC_2$ and $EC_4$. $EC_2$ elevated, shining on vertex, and interrupted at basal third to middle. $EC_1$ low, on basal fourth a little more elevated, from basal fourth to middle with large and round punctures, and on apical half with punctures obsolete. ISC slightly elevated, vertex shining and completed. (Fig 3-E). ESC on basal half densely with large and

round punctures. Space between costae with a clear and shining stria, which is bordered by two low carinae; strial punctures round and deep, accompanied on either side by a small tubercle, which interrupts the low carina. Area between ESC and external subhumeral stria moderately, roundly and densely punctate. Epipleura densely with large, round and shallow punctures. Scutellum shining, subparallel basally, and arcuate apically, with microscopical structures.

Propygidium with PMC, which is strong from basal margin to apical fourth, vertex densely with small punctures and shining. PLC short on apical half and low. Punctures mostly large, round, shallow, and separated by 0.3 to 0.5 times their diameter, along the anterior margin confluent, and along the lateral and posterior margins becoming smaller. All these punctures setiferous (Fig. 3-F).

Pygidium without carinae, and depressed behind anterior angles. Discal area broadly convex. Punctures round, shallow and dense, smaller than most propygidial ones (Fig. 3-G).

Prosternum flat between coxae, feebly convex anteriorly. Punctures large, round, separated by 0.5 times their diameter, but near basal angles intermixed with small punctures. Posterior margin deeply emarginate. Prosternal lobe transverse, about 0.3 times as long as prosternum. Anterior margin straight. Punctures small and dense, absent along the posterior margin.

Mesosternum transverse, anterior margin fitting to prosternal emargination. Punctures confluent, moderate and sparse.

Metasternum separated from mesosternum by clear meso-metasternal stria. Median longitudinal suture distinct. Punctures large, irregular, and confluent along the anterior margin, much larger behind the mesocoxae; along the lateral margin, large, round and sparse; before the metacoxae large and confluent; on discal area moderate ones and fine ones mixed; along the posterior margin fine and dense. Surface slightly depressed along the median longitudinal suture.

First abdominal sternum sparsely with large, round and deep punctures, which become smaller and denser towards the posterior margin.

Protibia slender, with twelve spicules, of which seven apical ones are large, each occurring on a slightly elevated base.

Male genitalia as figured (Fig. 4-G, -H).

♀. Body length 3.38 mm between anterior angles of pronotum and apex of propygidium, and 3.14 mm between anterior angles of pronotum and apices of elytra. Width 2.39 mm. In general appearance quite similar to the male except in the metasternum not depressed along the longitudinal midline.

Specimens examined. 1♂ and 1♀. Honshû—1♂ (holotype) and 1♀, Shitakura, Sôja, Okayama-ken, 7/iii/1976, T. Aono leg. (holotype in the collection of T. Nakane).

Distribution. Japan (Honshû).

Remarks. This new species is closely related to *O. niponensis* Lewis, 1907, from Tôkyô, but can be separated from the latter by having the following characters: body larger, labrum with several setiferous punctures, $PC_3$ absent, pronotum more sparsely punctate, and the basal piece of male genitalia different in shape.

## *Onthophilus ordinarius* Lewis

*Onthophilus ordinarius* Lewis, 1879 : 79 [USSR : Irkutsk] ; Reichardt, 1933 : 143, fig. 1 [key ; illustrated ; noted] ; Reichardt, 1941 : 86, 88, fig. 43a ; Kryzhanovsky and Reichardt, 1976 : 286, 287, fig. 571 [key ; illustrated ; noted].

Specimens examined. 3♂♂, 1♀, and 1 ex. Hokkaidô—1 ex., Sapporo, 10/vi/1940, Y. Nishijima leg. ; 1♂, Sapporo, 24/v/1939, H. Kôno leg. (Hokkaidô Univ.) ; 1♂, Maruyama, Sapporo, 24/v/1939, Y. Nishijima leg. (Hokkaidô Univ.) ; 1♂ and 1♀, Nopporo, 14 and 27/vi/1986, M. Ôhara leg.

Distribution. Japan (Hokkaidô) ; USSR (Vladivostok ; Baikal Sea ; Novosibirsk ; Irkutsk ; Ussuri). New to Japan.

Remarks. This species is allied to *ostreatus, niponensis* and *aonoi* sp. nov., but differes from them by the pronotum more transverse and with more elongate punctations, by $PC_3$ posteriorly abbreviated, and by the basal piece and tegmen of male genitalia differently shaped. Posterior margin of prosternum with hairs in male. Female larger in size than male.

## *Onthophilus flavicornis* Lewis

*Onthophilus striatus* : Harold, 1878 : 69 (nec. Forster, 1771) [Japan : Tôkyô].

*Onthophilus flavicornis* Lewis, 1884 : 139 [Japan : Bukenji, near Yokohama] ; Schönfeldt, 1887 : 53 ; Bickhardt, 1910 : 80 [catalogued] ; Bickhardt, 1916 : 65 [catalogued] ; Adachi, 1930 : 249 [key, noted] ; Reichardt, 1933 : 139, 142 ; Kamiya and Takagi, 1938 : 22 [listed] ; Kryzhanovsky and Reichardt, 1976 : 285 [key] ; Hisamatsu, 1985 : 226 [photo. ; noted].

Specimens examined. 20♂♂, 12♀♀, and 11 exs. Hokkaidô— 1 ex., Maruyama, Sapporo, 4/vi/1939, K. Seki leg. (Ôsaka Museum of Natural History). Honshû—1 ex., Kamisuwa, Shinano, Nagano-ken, 27/vi/1918, M. Suzuki leg. (Kyûshû Univ.) ; 1♀, Sugi-tôge, Kyôto-fu, 4/v/1983, H. Ashida leg. ; 6 exs., Daisen, Tottori-ken, 25/iv/1942, K. Sakaguchi leg. ; 1 ex., Hiraoka, Ôsaka-fu, 11/iii/1953, K. Sawada leg. ; 1 ex., Jônen, 1300 m, Nagano-ken, 2/vi/1960, K. Kamimura leg. Kyûshû—1 ex., Ichifusa-yama, Kumamoto-ken, 27/x/1985, T. Tanabe leg. ; 20♂♂ and 11♀♀, ditto, 13/v/1985, S. Nomura leg. ; 1 ex., Shimabara, Nagasaki-ken, 22/viii/1978, S. Imasaka leg.

Distribution. Japan (Hokkaidô ; Honshû ; Shikoku ; Kyûshû). New to Hokkaidô.

Remarks. *O. flavicornis* is easily distinguished from all other Japanese species of the genus by the body size, the elytral costae without interruptions, and the basal piece of male genitalia open dorsally at the base. This last character was adopted by Helava (1978) in recognizing his *flohri* group. This species is found in litter of forests.

## *Onthophilus kamiyai* Adachi

*Onthophilus kamiyai* Adachi, 1930 : 250 [Japan : Tamagawa-mura near Tôkyô] ; Reichardt, 1933 : 137 ; Kamiya and Takagi, 1938 : 22 [listed] ; Kryzhanovsky and Reichardt, 1976 : 285.

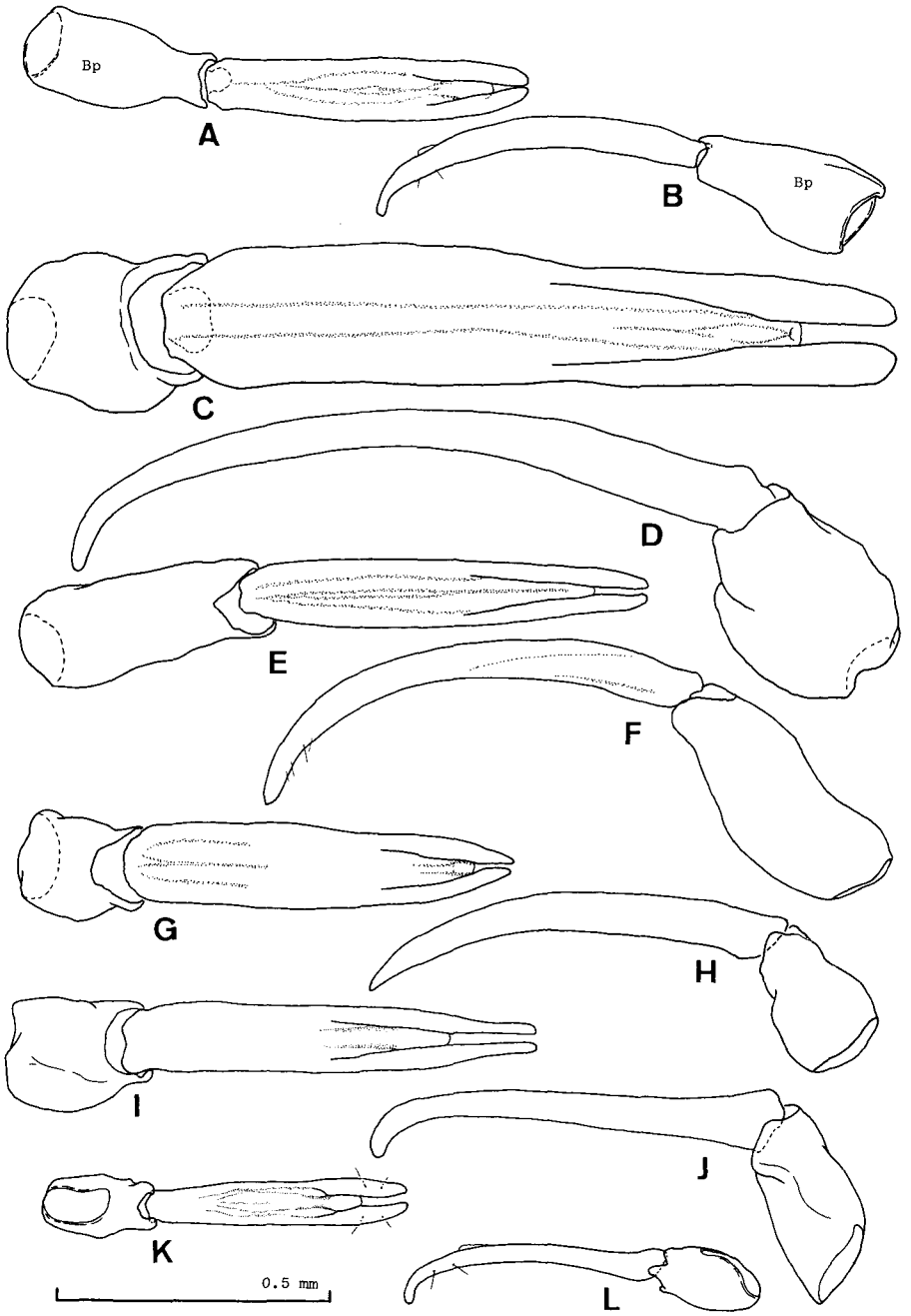


Fig. 4. Male genitalia of *Onthophilus* spp. in dorsal and lateral views (Bp : Basal piece). A-B : *O. silvae* Lewis (Sapporo, Hokkaidô). C-D : *O. ostreatus* Lewis (Kanoya, Kagoshima, Kyûshû). E-F : *O. niponensis* Lewis (Wakamatsu, Fukushima, Honshû). G-H : *O. aonoi* sp. nov. (holotype ; Sôja, Okayama, Honshû). I-J : *O. ordinarius* Lewis (Sapporo, Hokkaidô). K-L : *O. flavicornis* Lewis (Ichifusa, Kumamoto, Kyûshû).

Original description: "Oval, black, somewhat shining. Head densely punctured; vertex 3-costate; outer two costae oblique, contiguous with each other at their frontal ends. Scape of the antenna large, black; funicle and club brownish red. Palpi brownish red. Thorax rather densely punctured and with six costae; outer two short and near the base; intermediate four complete, slightly oblique, contiguous with one another anteriorly. Elytra with seven costae elevated alternately; the second costa elevated the highest; the fourth and sixth come next; and the remaining costae in odd number low; interstices of these costae with two longitudinal series of very short, slender costae, and between them a series of punctures. Propygidium densely punctured, with a median longitudinal carina. Underside densely punctured. Legs black. Length, 2 mm.; width, 1.5 mm."

Distribution. Japan (Honshû).

Remarks. This species was originally described on the basis of three specimens. However, those specimens, once deposited in Tôkyô Agriculture College, were burned out during World War II, and no material of this species has been available. Judging from Adachi's description and another character given in his key, this species is very similar to *flavicornis*, but may be distinguished from the latter by the $PC_3$ complete, and by the propygidium with only one carina.

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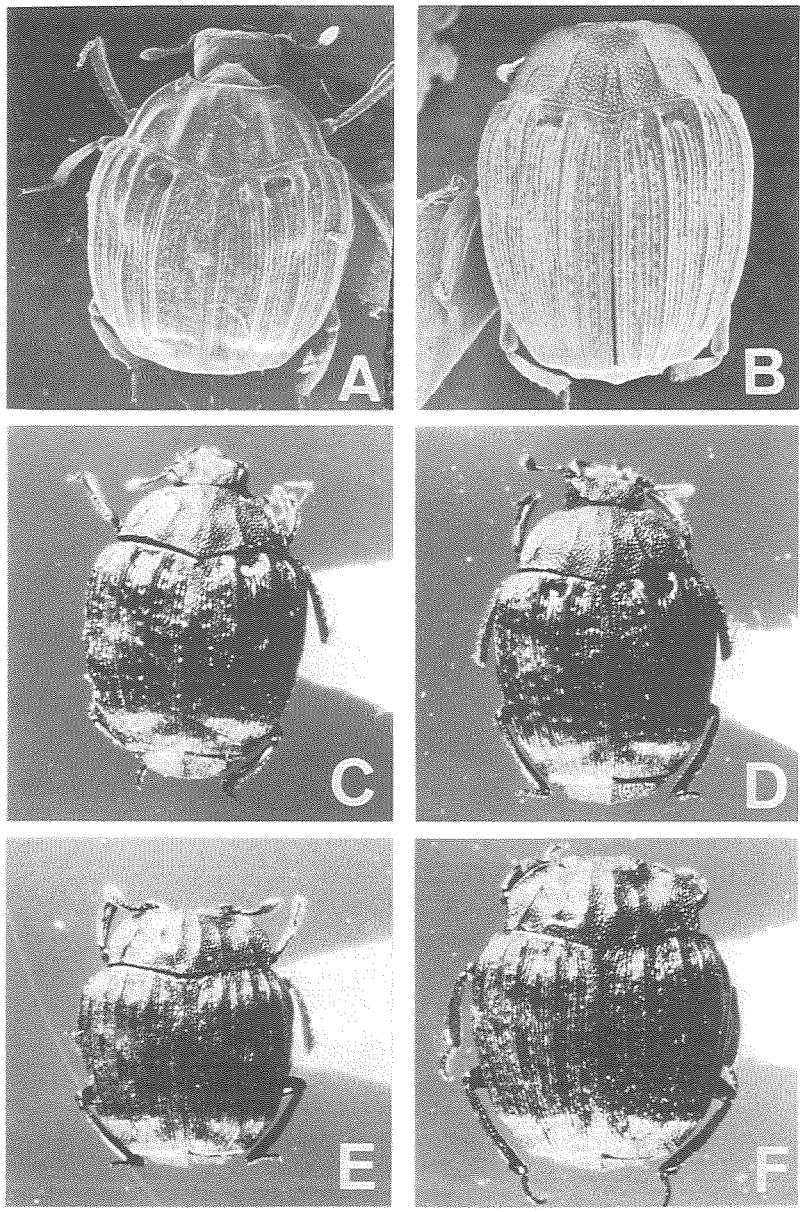


Fig. 5a. Body in dorsal view. A : *O. ostreatus* Lewis, male (Kanoya, Kagoshima, Kyûshû). B : *O. niponensis* Lewis, male (Hachinohe, Aomori, Honshû). C : *O. aonoi* sp. nov., male (holotype ; Sôja, Okayama, Honshû). D : ditto, female (paratype ; ditto). E : *O. ordinarius* Lewis, male (Nopporo, Hokkaidô). F : ditto, female (ditto).

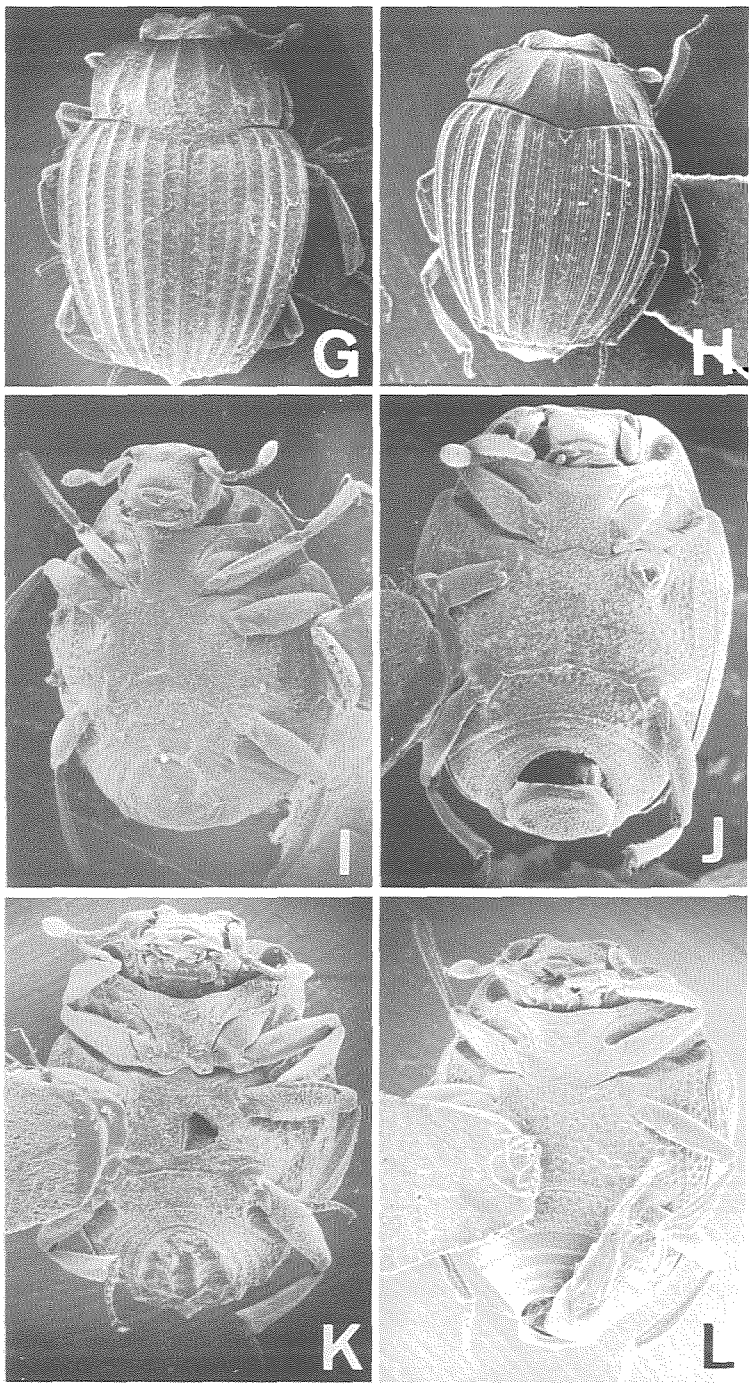


Fig. 5b. G-H: Body in dorsal view. G: *Onthophilus silvae* Lewis, male (Sapporo, Hokkaidô). H: *O. flavicornis* Lewis, male (Ichifusa, Kumamoto, Kyûshû). I-L: Body in ventral view. I: *O. ostreatus* Lewis. J: *O. niponensis* Lewis. K: *O. silvae* Lewis. L: *O. flavicornis* Lewis.

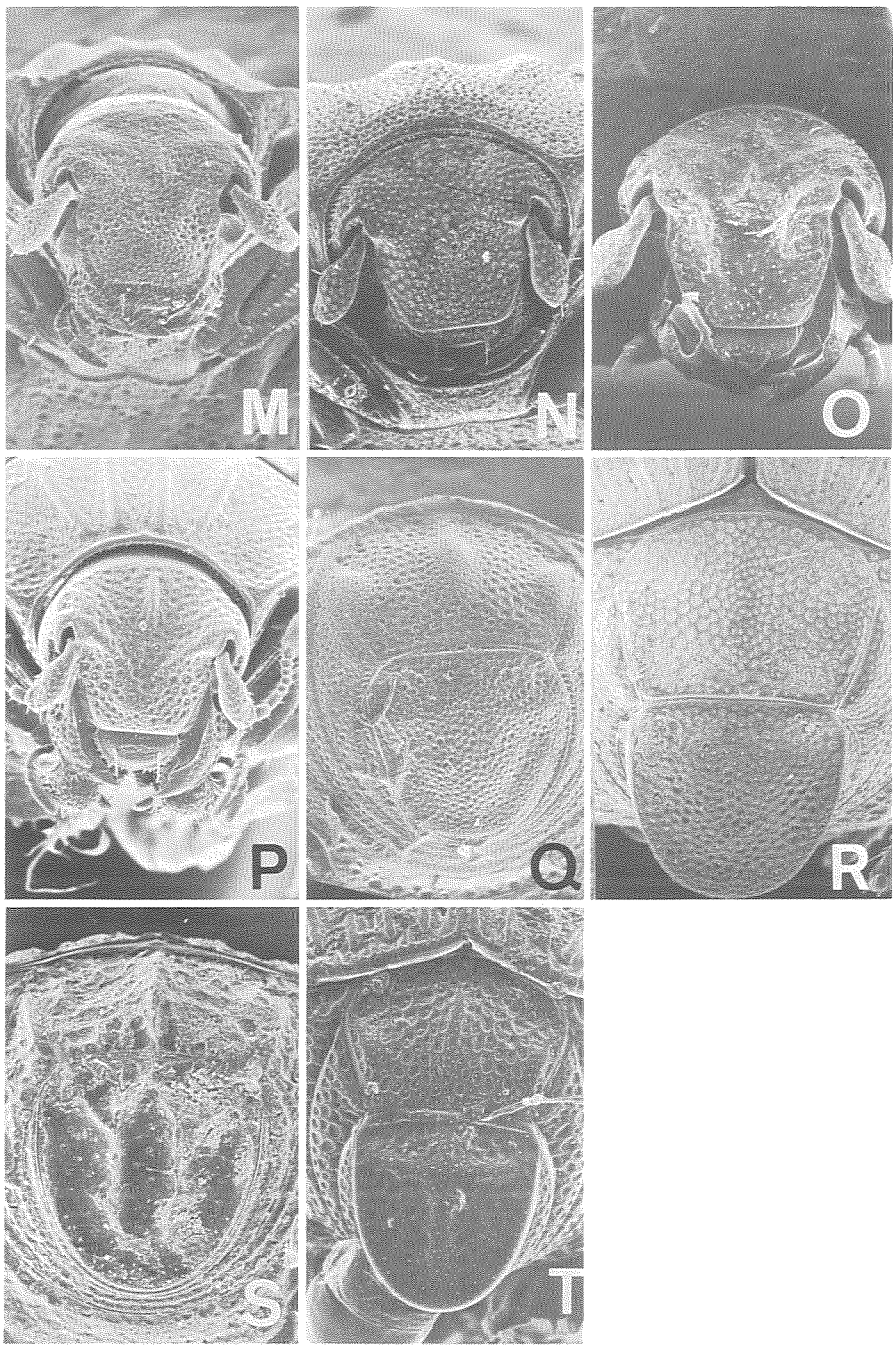


Fig. 5c. M-P: Head. M: *O. ostreatus* Lewis. N: *O. niponensis* Lewis. O: *O. silvae* Lewis. P: *O. flavicornis* Lewis. Q-T: Propygidium and pygidium. Q: *O. ostreatus* Lewis. R: *O. niponensis* Lewis. S: *O. silvae* Lewis. T: *O. flavicornis* Lewis.